



Clinical Update

Naval Postgraduate Dental School
National Naval Dental Center
Bethesda, Maryland

Vol. 22, No. 5

May 2000

Tissue Conditioning

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Improperly fitting dentures may affect the character, condition, and form of the underlying soft tissues. Abused tissue that is not properly treated prior to impression making will only perpetuate the abuse. Tissue conditioning encompasses the methods to treat abused tissues as part of a prosthodontic treatment plan. Abnormalities, whether they are local, mechanical, or systemic in origin, must receive proper diagnosis and treatment. A comprehensive clinical examination and accurate dental history are essential to identify problems and take necessary corrective action.

It is the responsibility of both the dentist and the patient to address the tissue abuse in order to achieve tissue health prior to fabrication of a new prosthesis. It is essential to educate the patient and enlist his cooperation in the tissue conditioning process. The success of a new denture requires the support of healthy tissues. Successful recovery of abused tissue requires tissue conditioning. This treatment process is more than merely applying tissue conditioner to a denture; it is a composite of actions with the goal of restoring the intraoral tissues to a healthy, relaxed, uninflamed state. Methods of treatment may be categorized as surgical or non-surgical.

Non- surgical treatment methods

1. Rest for the denture-supporting tissues: Achieved by removal of the dentures from the mouth. In the absence of extremely abused tissue and unfavorable systemic factors, 48 to 72 hours (one weekend) would generally be enough time for the tissues to return to a satisfactory condition for impressions (1). Patients should be instructed to leave their existing prostheses out for the entire period. This includes the time immediately preceding the impression appointment. Many patients will feel self-conscious about leaving their teeth out while traveling in to see the dentist, but wearing the denture will negate the effects of leaving the prosthesis out for the previous 48-72 hours. Educating the patient regarding the importance of this step in tissue treatment will help ensure compliance (2).

2. Vertical dimension correction of old prosthesis: A decreased vertical dimension may result in excessive or misdirected forces being applied to the residual ridges and overlying soft tissues. Vertical dimension can be restored by using an interim resilient lining material.

3. Occlusion: Proper occlusion is probably the most important factor in maintaining tissue health (3). Occlusal discrepancies will distort alveolar mucosa and cause soft tissue discomfort. If occlusal discrepancies are suspected, a clinical remount procedure will be necessary to restore occlusal harmony and establish proper distribution of the forces over a wider area.

4. Good nutrition: A program of proper nutrition is essential. A nutritional deficiency can produce a number of intraoral manifestations including atrophy, edema, xerostomia, and reduced healing capability. If nutritional deficiencies are suspected, it may be necessary to obtain a medical consultation to identify and correct the specific deficiency (4).

5. Oral hygiene: *Candida Albicans* is known to colonize readily on denture surfaces as well as the soft tissues under a prosthesis. It is essential to treat both the tissue and the denture. The prosthesis tissue surface as well as the intraoral tissues should be cleaned with a brush. Antifungal agents such as Nystatin pastilles (200,000u), or Clotrimazole troches (10 mg) may be prescribed. (Disp: 70 pastilles (troches), Sig: let 1 pastille dissolve in mouth five times a day. Do not chew) (5). *Candida albicans* can infiltrate into porous denture materials, and it may be necessary to remove a layer of infected acrylic and replace with a soft liner (6,7).

6. Oral massage: Massage provides stimulation to the tissues, which increases vascularity and can help restore the health of the tissue. Tissues can be massaged with a soft brush, digitally massaged with gauze dipped in warm saline, or by chewing a large bolus of bubble gum (4,7).

7. Tissue conditioners: Tissue conditioners are soft elastomers used to treat irritated mucosa supporting a denture. They are mixed at chairside, placed in the denture, and seated in the patient's mouth. These materials will conform to the anatomy of the ridge, gel in that position, and continue to flow slowly after application.

Use of Tissue Conditioners and Resilient Denture Liners

Numerous products are marketed as tissue conditioning material or soft (resilient) liners. An understanding of the properties of the materials is essential for their proper use in the treatment of the prosthodontic patient.

Selection of material: Tissue conditioners initially display a plastic behavior, which means they will adapt to the changing shape of distorted tissue as the tissues recover and become healthy. Unfortunately, this plastic behavior changes with time to a more elastic behavior as the ethanol and plasticizers leach out of the material and water is absorbed. The more elastic the material, the less it conforms to the changes of the alveolar tissue. Eventually, all these materials will become hard, rough, and clinically unacceptable.

The selection of a material should then be based upon the diagnosis, treatment goals, and the individual characteristics or properties of the material. Products differ in their flow characteristics, both initially, and over the passage of time. It is difficult

to discern the flow characteristics of a product from the label. For example, while both Coe-Comfort (G-C America) and Lynal (Dentsply/Caulk) are marketed as tissue conditioners, Coe-Comfort has been shown to exhibit higher flow characteristics over a seven day period when compared to Lynal (8). Most products will continue to flow for periods of up to seven days. Possessing greater flow characteristics, products such as Coe-Comfort and Viscogel (Dentsply/Detrey) are indicated for use as tissue conditioners, whereas products such as Coe-Soft (G-C America), F.I.T.T. (Kerr), and Hydrocast (Kay-See Dental), with lesser flow characteristics, are suggested for use as resilient liners (9).

Greater tissue mobility or inflammation is an indication for the use of a less viscous (more flowable) tissue conditioning material. Less viscous materials such as: Coe-Comfort should be changed more frequently, approximately every 2-3 days. With a lesser degree of inflammation, a more viscous material, e.g., Viscogel, may be selected. Viscogel is unique in that the manufacturer recommends replacement within 30 days.

Technique

1. Prepare the denture: Remove sufficient material from the tissue surface of the denture base in the area over the ridges to allow space for the material. A minimum thickness of 1 mm is necessary for effective tissue conditioning. Maintain the border or flange height and three positive tissue stops. If both maxillary and mandibular arches are to be treated, start with the most stable arch, and do only one arch at a time.

2. Mix the material: Follow the manufacturer's recommendations for proper powder to liquid ratio. Additional powder may be added if a thicker mix is desired.

3. Apply the material to the entire tissue surface of the denture, then slowly, but firmly seat the denture into place. The maxillary denture is usually relined first in order to establish a correct plane of occlusion. When relining the second prosthesis, have the patient close into centric relation, using the opposing denture as a guide. Maintain the denture in place for three minutes, and then border mold by having the patient exercise his facial musculature. The vertical dimension must be previously established so that you know how far to let the patient close during the reline of the second prosthesis.

4. Trim the excess: After the material has sufficiently set (usually around 10 minutes), remove the denture from the patient's mouth and trim the excess with a scalpel or sharp knife. Remove any irregularities or rough areas. Advise the patient to avoid chewing hard foods for at least eight hours, as this may excessively distort the material. An appropriate recall must be scheduled for reevaluation and replacement of the material. Depending upon the degree of inflammation present and the tissue response, it may be necessary to replace the tissue conditioning material multiple times (10).

5. After tissue health has been achieved and the final impression is made, it is also important to continue to maintain the tissue in a state of health. The record bases and the final prosthesis will be fabricated based upon the final impressions, therefore any

adverse tissue changes that occur after making the final impressions will be reflected in the fit of both the record bases and the final prosthesis.

Surgical treatment

When the above methods fail to achieve a state of tissue health, surgical intervention may be required. Inflammatory hyperplasia or epulis fissuratum may require treatment by conventional surgical excision or electrosurgery (4).

Summary

Tissue conditioning is an essential part of an overall prosthodontic treatment plan. Patient education into the causes of and prevention of tissue abuse is extremely important. Only when tissues are allowed to recover to a healthy condition can we achieve an optimum result in prosthesis fabrication.

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